



NEWSLETTER OF THE LONDON CHAPTER,
ONTARIO ARCHAEOLOGICAL SOCIETY

c/o Museum of Ontario Archaeology
1600 Attawandaron Road, London, ON N6G 3M6



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09-6 & 09-7

The next meeting will be February 11th - **MEMBERS' NIGHT!!**

So far Adam Hossack, Chris Ellis and Dana Poulton have agreed to give brief presentations.

Upcoming monthly meeting presenters:

Christine White will be the March 11th speaker
and Chris Watts will be the April 8th speaker.



Speaker's Night is held the 2nd Thursday of each month (January to April and September to December) at the Museum of Ontario Archaeology, 1600 Attawandaron Road, near the corner of Wonderland & Fanshawe Park Road, in the northwest part of the city. The meeting starts at 8:00 pm.

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ANNUAL RATES

Student	\$15.00
Individual	\$18.00
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SALVAGE ARCHAEOLOGY IN LONDON: THE C.O.E.D. PROJECT

PART 3 (B): THE MULTI-COMPONENT POND MILLS SITE

Dana Poulton

Chipped Stone

Chipped lithic technology at the Pond Mills site is abundantly represented by a variety of artifact categories and by the large sample of chipping debitage. With the exception of the latter, all categories were analysed. This included the visual determination of chert type. Formal artifact categories are dominated by bifaces, scrapers and projectile points. The formal and informal tools and cores comprise 284 pieces, exclusive of pre-Iroquoian bifaces and scrapers. These subsume four identifiable cherts and one indeterminate chert category. Table 11 presents the correlations of artifact category and

raw material for 278 pieces recovered from Middens 301 and 303. As this shows, the Late Woodland chipped lithics are dominated by local pebble cherts (N-95, 34.1%) and Onondaga chert (N-92, 33.0%), and a minor representation of Kettle Point (N-27, 9.7%) and Ancaster chert (N-3, 1.1%). However, local pebble cherts are poorly represented among the formal tools. Of the sample of 77 projectile points, point preforms, drills, bifaces and scrapers, local pebble cherts form only 7.8% (N-6). Other formal tool raw material frequencies are as follows: Onondaga, 46.8% (N-36); Indeterminate, 28.6% (N-22); Kettle Point, 13.0% (N-13); and Ancaster 3.9% (N-3). The data generally suggest a preference for the use of better quality cherts, derived from some distance, for the manufacture of formal tools. Of these, Ancaster chert may have arrived only in the form of finished projectile points and/or point preforms. No such preferences, however, appear to be indicated in the selection of cherts for informal tools, hence the significant incidence of local pebble cherts among utilized flakes and pièces esquillées.

Projectile Points

The 1983 excavations recovered 13 complete and fragmentary Iroquoian projectile points. The nature of these specimens, together with the relevant chert data, are summarized in Table 12. The majority are complete and are illustrated in Figure 11:a-h). As Table 12 indicates, all of the specimens were derived from either Midden 301 or 303, and both triangular

Table 11: Pond Mills Site; Frequency and Raw Materials of Analysed Late Woodland Chipped Lithic Categories, Middens 301 and 303*

Artifact Category	Chert Type										Total
	Kettle Point		Onondaga		Local Pebble		Indeterminate		Ancaster		
	Midden		Midden		Midden		Midden		Midden		
	301	303	301	303	301	303	301	303	301	303	
Projectile Point		3	4	2			1	1	2		13
Point Preform			1	1			3	1		1	7
Drill		1	2								3
Biface	1	1	7	8		1	6	3			27
Scraper	2	2	6	5	1	4	4	3			27
Pièce Esquillée	3	2	7	7	10	7	2				38
Utilized Flake	3	6	14	14	13	6	6	11			73
Core		3	5	9	28	25	10	11			91
Total per Mid-den	9	18	46	46	52	43	32	30	2	1	279
Total both Middens	27		92		95		62		3		
% of Total	9.7		33.0		34.1		22.2		1.1		

Table 12: Pond Mills Site; Iroquoian Projectile Points; Form, Nature and Chert Type

Midden	Form	Nature	Onondaga	Kettle Point	Ancaster	Ind.	Total
301	Triangular	Complete	1			1	2
	Side-Notched	Complete	1		1		2
		Base	1				1
		Blade	1				1
	Indeterminate	Tip			1		1
	Subtotal		4		2	1	7
303	Triangular	Complete		1		1	2
	Side-Notched	Complete	1	1			2
		Missing Tip	1				1
	Indeterminate	Blade		1			1
	Subtotal		2	3		1	6
Total			6	3	2	2	13

and side-notched points are present in each. The combined sample consists of four triangular points (Table 13), seven side-notched points (Table 14), and two distal blade or tip fragments. Although the sample is too small to permit many meaningful comparisons, some differences may be noted. In terms of raw materials, all are manufactured of chert. Four cherts are represented in the combined sample, however, Kettle Point chert is absent in Midden 301 and Ancaster chert is absent in Midden 303. Almost half of the total sample is of Onondaga chert.

The points are triangular in shape and most feature straight blade and basal edges. All but one also features complete bifacial retouch. Exceptions to the above are noted in the following descriptions. Of the two triangular points from Midden 301, one point was recovered in two fragments: the distal fragment is burnt (Figure 11:a). This specimen has a slightly concave base and proximal blade edges. The other Midden 301 triangular point (Figure 11:b) has an obliquely-oriented base with a slightly convex edge. Of the two triangular points from Midden 303, one (Figure 11:c) is burnt. The other (Figure 11:d) is only marginally retouched and may be juvenile.

Table 13: Pond Mills Site; Late Woodland Projectile Point Metrical Data					
Triangular Points	Dimensions (in mm)			Width/Length Ratio	Thickness/Length Ratio
	Total Length	Base Width	Thickness		
N	4	4	4	4	4
Range	21-42	10-22	3-5	.40-.52	.10-.14
Mean	32.5	15.5	4	0.48	0.12

The Midden 301 side-notched points comprise two complete specimens, a burnt blade fragment that retains a portion of a notch, and a base hinged between the notches. The two complete examples vary somewhat in haft element attributes: one (Figure 11:g) has somewhat poorly-developed shoulders and narrow, rounded tangs; the other (Figure 11:h) has well-developed shoulders and squared tangs. The basal fragment has a convex basal margin. The Midden 303 side-notched points comprise two complete specimens and one specimen missing the distal half of the blade. The larger of the complete specimens (Figure 11:e) has convex blade and basal edges with well-developed shoulders; the smaller complete point (Figure 11:f) has convex blade edges and a concave basal margin, with moderately well-developed shoulders. This point has been reworked and features drill wear at the tip. The fragmentary side-notched point from Midden 301 has very poorly developed shoulders and a straight basal margin. The ratios summarized in Table 14 show that the Midden 301 side-notched points are comparatively longer, narrow and thinner, with a longer blade in relation to the haft element.

Table 14: Pond Mills Site; Late Woodland Projectile Point Metrical Data (Dimensions in mm)										
Side-Notched Points	Total Length	Base Length	Blade Length	Shoulder Width	Base Width	Inter-Notch Width	Thickness	Width/Length Ratio	Thickness/Length Ratio	Base/Blade Length Ratio
N	4	5	4	5	6	6	5	4	4	4
Range	21-42	6-10	13-33	8-14	11-16	4-9	4-5	.33-.54	.12-.19	0.27-.62
Mean	31.8	7.4	23.5	11.2	13.5	6.8	4.8	0.45	0.16	0.39

Projectile Point Preforms

Seven artifacts were identified as projectile point preforms on the basis of their similarity to finished projectile points. Six are complete and the remaining one is missing the tip. All feature total bifacial retouch. Of the total, four were recovered from Midden 301 and three from Midden 303. The sample may be categorized as follows: finished preform (N-1, Midden 303); preform reject (N-4; Midden 301, N-2; Midden 303, N-2); unfinished preform (N-1, Midden 301); and preform fragment (N-1, Midden 301). The finished preform (Figure 11:i) features a convex base and measures 32, 14 and 5mm in maximum length, width and thickness. The unfinished preform (Figure 11:k) is 36mm long, 18mm wide and 5mm thick. It is rectanguloid in shape and burnt. The preform rejects (Figure 11:j) all feature thick nubbins of chert on one or both faces that the knapper was unable to remove. The average length, width and thickness for the four preform rejects is 28.5, 17.8 and 6.3mm, respectively. All but one of the preforms from Midden 301, a reject, are of indeterminate chert: the exception is of Onondaga chert. The Midden 303 specimens comprise one finished preform of Ancaster chert and two rejects of Onondaga and indeterminate chert, respectively. No Kettle Point chert preforms were found. The relative shortness and thickness of the rejects compared to the finished projectile points reflect the reasons for which the rejects were discarded.

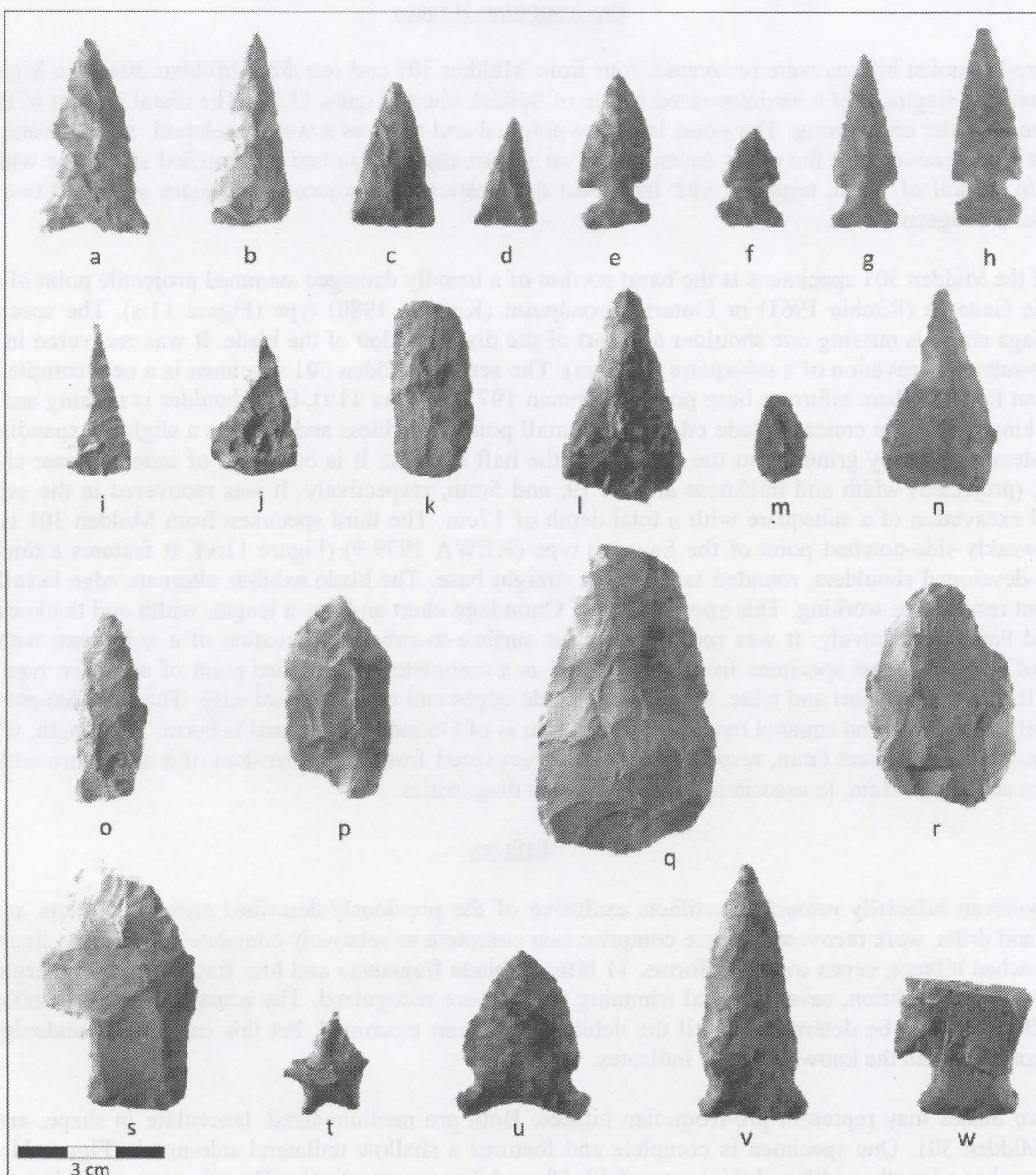


Figure 11: The Pond Mills Site; Assorted Chipped Stone Artifacts

Drills

Three drills were recovered in addition to the point used as a drill. One is from Midden 303 (Figure 11:1). It is trianguloid in shape, with concave blade edges and a convex base, and features complete bifacial retouch. The other two are from Midden 301. The larger one (Figure 11:n) has only marginal retouch on the base and is asymmetrically trianguloid in shape. The smaller one (Figure 11:m) features complete bifacial retouch, with convex blade margins, and is missing the base. The lengths, widths and thicknesses of the three drills are 43, 26 and 9mm; 41, 24 and 7mm; and 18, 11 and 3mm, respectively. The Midden 303 specimen is of Kettle Point chert; the others of Onondaga chert.

Pre-Iroquoian Bifaces

Five pre-Iroquoian bifaces were recovered, four from Midden 301 and one from Midden 303. The Midden 303 specimen is a fragment of a medium-sized biface of Selkirk chert (Figure 11:w). The distal portion of the blade and one shoulder are missing. The point is corner-notched and features a well-developed shoulder and convex base. It was discovered in the upper seven cm. of an apparently undisturbed, unstratified subsquare with a total depth to subsoil of 14cm, together with Iroquoian diagnostics. The adjacent subsquare produced two Middle Woodland Saugeen sherds.

One of the Midden 301 specimens is the basal portion of a heavily damaged stemmed projectile point of the Late Archaic Genesee (Ritchie 1961) or Ontario Broadpoint (Kenyon 1980) type (Figure 11:s). The specimen, of Onondaga chert, is missing one shoulder and part of the distal portion of the blade. It was recovered in the surface-to-subsoil excavation of a subsquare (0-26cm). The second Midden 301 specimen is a near complete example of an Early Archaic bifurcate base point (Chapman 1975) (Figure 11:t). One shoulder is missing and evident re-working resulted in concave blade edges. This small point is barbless and features a slightly expanding bifurcated stem with heavy grinding on the margins of the haft element. It is burnt and of indeterminate chert. The length, (projected) width and thickness are 21, 19, and 5mm, respectively. It was recovered in the surface-to-subsoil excavation of a subsquare with a total depth of 17cm. The third specimen from Midden 301 is a complete, weakly-side-notched point of the Saugeen type (KEWA 1979:9) (Figure 11:v). It features a thick blade, poorly-developed shoulders, rounded tangs and a straight base. The blade exhibits alternate edge bevelling, the apparent result of re-working. This specimen is of Onondaga chert and has a length, width and thickness of 52, 21, and 9mm, respectively. It was recovered in the surface-to-subsoil excavation of a subsquare with a total depth of 18cm. The last specimen from Midden 301 is a complete side-notched point of unknown type (Figure 11:u). It is relatively short and wide, with convex blade edges and concave basal edge. The haft element features well-defined notches and squared tangs. This specimen is of Onondaga chert and is burnt. The length, width and thickness are 35, 28, and 6mm, respectively. It was recovered from the upper 4cm of a subsquare with a total depth to subsoil of 11cm, in association with Iroquoian diagnostics.

Bifaces

Twenty-seven bifacially retouched artifacts exclusive of the previously-described projectile points, point preforms and drills, were recovered. These comprise two complete or relatively complete blades, two fragments of side-notched bifaces, seven ovoid preforms, 11 bifacial blade fragments and four fragments with marginal bifacial retouch. In addition, seven bifacial trimming flakes were recognized. The actual incidence of biface trimming flakes cannot be determined until the debitage has been examined, but this category is undoubtedly far more common than the known number indicates.

The two blades may represent pre-Iroquoian bifaces. Both are medium-sized, lanceolate in shape, and derive from Midden 301. One specimen is complete and features a shallow unilateral side-notch (Figure 11:o). This specimen has a length, width and thickness of 40, 18, and 7mm, respectively. The other specimen is missing the distal portion of the blade and has an asymmetrically concave base, possibly the result of secondary retouch following damage (Figure 11:p). It has a width and thickness of 22mm and 7mm respectively, and is thickest at the distal impact fracture. Both specimens are of indeterminate chert.

The two side-notched specimens may also be pre-Iroquoian. Both are basal fragments of medium-to-large sized bifaces and feature convex basal margins. One specimen is from Midden 301; the other from Midden 303. Both are of Onondaga chert. The former is burnt.

The seven ovoid preforms vary in the degree to which they are finished and bifacially retouched. All are complete or nearly so. Two specimens are from Midden 301. One of these features near-complete bifacial retouch and is of indeterminate chert (Figure 11:r). The other is incompletely retouched and of Kettle Point chert. The

lengths, widths and thicknesses of these two are 45, 29, and 13mm; and 56, 39, and 14mm, respectively. The remaining five ovoid preforms are all from Midden 303. The most finished of these (Figure 11:q) is of Onondaga chert and is missing the tip. It has an incomplete length of 62mm and a width and thickness of 37mm and 14mm, respectively. The other four feature incomplete bifacial retouch with the following metrical ranges and means: length, 32-41mm (x36.5); width, 22-30mm (x25.3); and thickness, 10-20mm (x14.0). One each is of Kettle Point chert, Onondaga chert, local pebble chert and indeterminate chert.

The 12 biface blade fragments are from medium-to-large sized artifacts and appear to represent fragments of finished tools. Five are from Midden 303 (four of Onondaga and one of indeterminate chert) and the remaining seven are from Midden 301 (five of Onondaga and two of indeterminate chert). The above subsume one burnt fragment of indeterminate chert from Layer 5 of Midden 303. The four marginally-retouched biface fragments comprise two each from Middens 301 and 303: each includes one example of Onondaga and indeterminate chert.

Scrapers

Twenty-eight scrapers are attributed to the Middleport component on the basis of form and provenience (Table 15). Five types are represented in addition to an indeterminate category comprised of fragmentary specimens. End scrapers comprise five specimens. One is from Midden 303. The distal portion of this artifact features marginal unifacial retouch; the proximal portion is missing. The remaining four end scrapers are from Midden 301. One features almost complete bifacial retouch (Figure 12:f). Two others feature unifacial retouch on the distal and lateral edges (Figure 12:g-h). The dorsal surface of the one (Figure 12:g) consists of a weathered pebble cortex. The remaining end scraper has retouch confined to the distal margin: the proximal portion is missing. The metrical ranges and means of the combined end scrapers sample are as follows: length (N-3), 34-44mm (x40.0); width (N-5), 20-27mm (x24.4); and thickness (N-5), 4-10mm (x7.8).

Midden	Scraper Type	Chert Type				
		Onondaga	Kettle Point	Local Pebble	Ind.	Totals
301	Random Flake				1	1
	Spokeshave	2		1		3
	End		1		3*	4
	Side	2				2
	Indeterminate	2	1			3
	<i>Subtotal</i>	6	2	1	4*	13
302	Side	1				1
303	Random Flake	1	1	2	2	6
	Spokeshave		1	2	1	4
	End	1				1
	Side	3				3
	<i>Subtotal</i>	5	2	4	3	14
Totals		12	4	5	7	28

*Includes one bifacial scraper

Side scrapers (Figure 12:a-b) are represented by six specimens. These have the following metrical ranges and means: length (N-5), 24-58mm (x38.0); width (N-6), 17-40mm (x27.0); and thickness (N-6), 5-15mm (x8.7mm). Random flake scrapers are represented by seven specimens. The metrical ranges and means for the total sample are as follows: length (N-7), 30-66mm (x41.6); width (N-7), 13-39mm (x29.7); and thickness (N-7), 8-30mm (x11.6).

Spokeshave scrapers are also represented by seven specimens: five exhibit discrete notches (Figure 12:c), the remaining two longer single or opposed concave scraping edges (Figure 12:d-e). The metrical ranges and means for the total sample are as follows: length, 16-37mm (x27.0); width, 16-29mm (x21.0); and thickness, 4-12mm (x7.1).

Distributional data demonstrate that although comparable numbers of scrapers were recovered from the two main excavation units, Midden 301 produced a larger number of end scrapers, while Midden 303 produced a larger number of random flake specimens (Table 15).

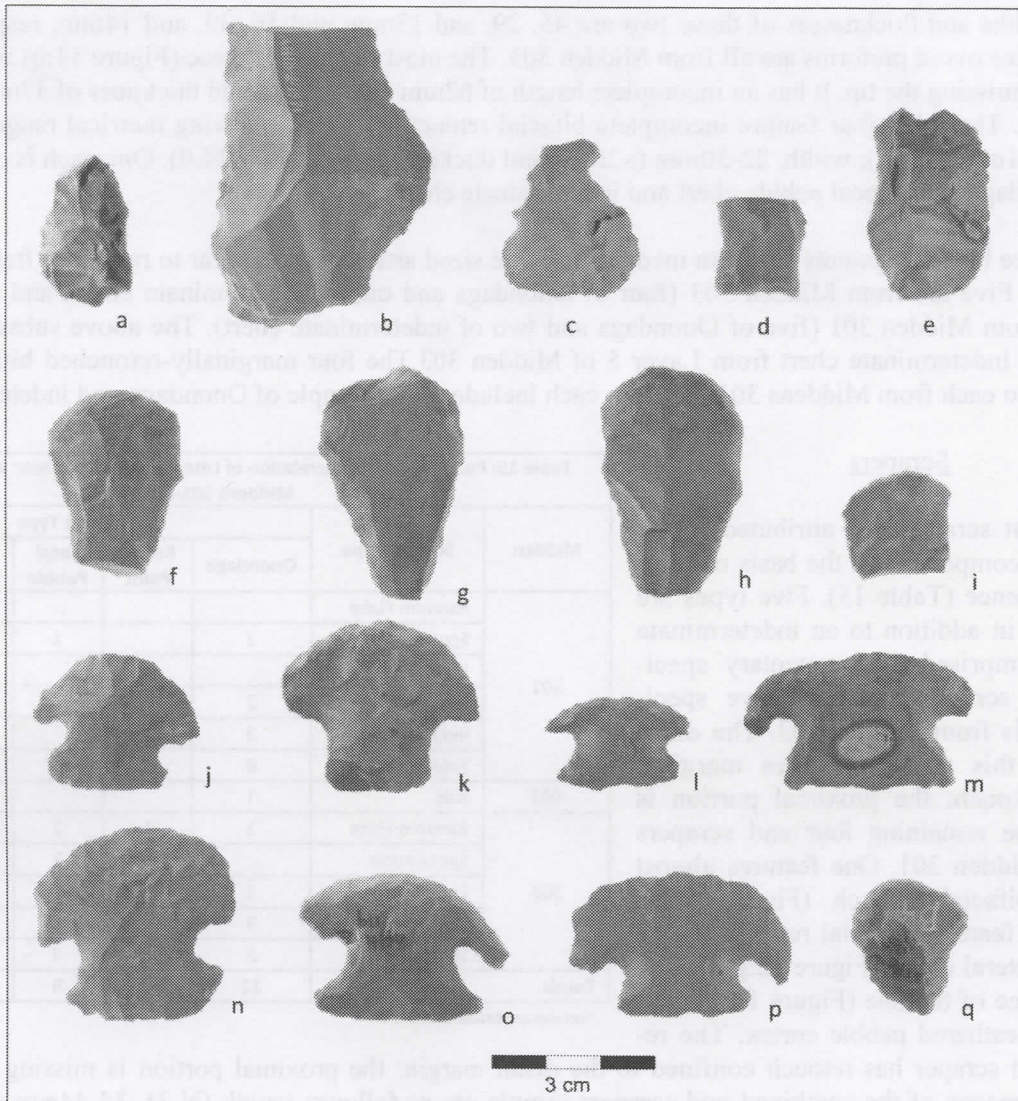


Figure 12: Pond Mills Site; Late Woodland and Pre-Iroquoian Scrapers

Pièces Esquillées

Thirty-nine pièces esquillées representing five separate varieties were recovered. Examples are present in all three middens. The varieties and raw materials are correlated in Table 16. The sample is dominated by specimens of the opposing ridge variety, prevalent in both Middens 301 and 303. The opposing ridge variety of pièces esquillées recovered from the Pond Mills site has an average length, width and thickness of 26.6, 22.4 and 8.8mm, respectively. While no significant differences are evident between the middens in terms of dimensions or chert type, the relatively high incidence of local pebble cherts in this artifact category will be noted.

Table 16: Pond Mills Site; Pièces Esquillées; Chert Types

Midden	Variety	Chert Type				Total
		Onondaga	Kettle Point	Local Pebble	Ind.	
301	Opposing Ridge	4	1	6	2	13
	Ridge Area	2		1		3
	Ridge-Point		1	1		2
	Area-Point			2		2
	Ridge?	1	1			2
	<i>Subtotal</i>	7	3	10	2	22
302	Ridge?		1			1
303	Opposing Ridge	5	2	5		12
	Ridge Area			1		1
	Area-Point			1		1
	Ridge?	2				2
	<i>Subtotal</i>	7	2	7		16
Totals		14	6	17	2	39

Utilized Flakes

A total of 75 utilized flakes were recovered. Distributions were as follows: Midden 301, N-36 (48.0%); Midden 302, N-2 (2.7%); and Midden 303, N-37 (49.3%). Onondaga chert comprises the most common raw material of the combined sample (N-30, 40.0%), followed by local pebble cherts (N-19, 25.3%) and indeterminate chert (N-17, 22.7%). Chert data, summarized in Table 11, indicate that Midden 301 features a higher relative incidence of local pebble cherts and a correspondingly lower relative incidence of Kettle Point specimens. Metrical data, indicate comparable sizes for the discrete Midden 301 and 303 samples. The average length, width and thickness of utilized flakes recovered from Midden 301 is 33.1, 24.1 and 7.5mm and for Midden 303 the average utilized flake measures 31.1, 23.2 and 7.6mm, respectively.

Cores

Ninety-two cores were recovered in 1983. Core type, raw material and distributional data are summarized in Table 17; metrical data are presented in Table 18. Bipolar cores comprise the most common type (N-44, 47.8%), followed by random cores (N-29, 31.5%), and indeterminate specimens (N-17, 18.5%). The bipolar type subsumes six complete and one fragmentary variety dominated, in descending order of frequency, by the opposing ridge variety (N-12), ridge-point (N-9), ridge-area (N-8) and opposing area (N-7) varieties. Metrical data demonstrate that the random cores are on average larger in all dimensions than the various bipolar varieties. The latter display little variation by variety in terms of size. Comparisons between the different midden samples indicate that the random cores and the opposing ridge and ridge-area varieties of the bipolar type are somewhat larger in Midden 301. Raw materials of the total core sample are dominated by local pebble cherts (N-53, 57.6%), followed by Onondaga (N-15, 16.3%) and Kettle Point (N-3, 3.3%): 21 specimens, mostly burnt, were categorized as indeterminate in the raw material identification. The correlations of core and chert types indicate no significant variation: local pebble cherts predominate for all types and varieties wherever more than one or a few specimens are present. It may be noted that no random cores of Kettle Point chert are represented, and that the few cores of this material are confined to Midden 303.

Table 17: Pond Mills Site; Correlation of Core Type/Variety, Raw Material and Distribution, Middens 301-303

Midden	Core Type	Core Variety	Chert Type				Total
			Onondaga	Kettle Point	Local Pebble	Ind.	
301	Random				8	4	12
	Bipolar	Ridge-Point	1		3		4
		Ridge-Area			2		2
		Opposing Ridge	1		9		10
		Opposing Area	2		2		4
		Area-Point				2	2
		Subtotal	4		24	6	34
	Indeterminate		1		4	4	9
302	Indeterminate		1				1
303	Random		3		10	4	17
	Bipolar	Ridge-Point	1		2	2	5
		Ridge-Area			6		6
		Opposing Ridge				2	2
		Opposing Area			3		3
		Area- Point		1	1	1	3
		Opposing Point			1		1
		Ridge?	2	1		1	4
		Subtotal	3	2	13	6	24
	Indeterminate		3	1	2	1	7
Total			15	3	53	21	92

Table 18: Pond Mills Site; Cores, Metrical Data

Type	Variety	N	Length (mm)		Width (mm)		Thickness (mm)	
			Range	Mean	Range	Mean	Range	Mean
Random		29	29-63	46	18-52	31	10-47	21
Bipolar	Opposing Point	12	28-52	36	12-40	26	7-18	11
	Ridge-Point	9	30-54	43	13-35	25	11-26	18
	Ridge-Area	8	31-51	38	13-39	25	12-30	16
	Opposing Area	7	31-54	38	20-38	27	12-31	19
	Area- Point	5	28-42	27	15-25	22	11-18	14
	Opposing Point	1	(37)	37	-24	24	(22)	22

Debitage

The large sample of chipped lithic debitage comprises 4,568 pieces with a total weight of 12,763 grams. Only one specimen, a flake of Huronian slate, is not of chert. It was recovered in association with Iroquoian diagnostics in strata overlying the Middle Woodland deposit of Midden 303. Although the debitage *per se* has not been analysed, specimens from layers 3-5 of Midden 303 were examined in order to ascertain the frequency and chert type of potentially Middle Woodland materials. Layer 3 produced nine pieces (13gms), comprising six pieces of burnt indeterminate chert and three pieces of local pebble chert. Layer 4 produced six pieces (8gms): five are of burnt indeterminate chert and one is of local pebble chert. Layer 5 produced 81 pieces (139gms) of the following chert types: indeterminate (N-45); local pebble (N-24); Onondaga (N-8); and Kettle Point (N-4).

Ground and Rough Stone

As in previous analyses, ground and rough stone have been incorporated for purposes of presentation. However, only one of the artifacts considered here corresponds to the ground stone artifact class in having been deliberately ground as part of the manufacturing process: a celt. All others are modified by use alone and pertain to the rough stone artifact class. The sample in general is relatively large. Notable features include the abundance of abraders and the presence of tools which combine two or more discrete functions.

Abraders

A total of 84 specimens functioned solely as abraders, in-so-far as can be determined: seven are complete and 77 are fragmentary. As such, these artifacts constitute the most abundant rough stone category, and are surprisingly abundant. Of 66 specimens that retain all or part of both faces, 27 feature a smooth, flat or slightly dished ground surface on one face and 38 are so modified on both faces: 18 other abrader fragments are split and are ground on the extant face. The remaining abrader features two parallel grooves on a slightly dished face and probably pertains to the manufacture of bone awls: such a piece could have been used to blunt the edges of chipped lithic preforms in order to facilitate retouch, but there is no evidence for this practice in the chipped lithic inventory.

All but four of the abraders are manufactured of sandstone, still common today along the eroding shore of the nearby South Pond. The exceptions, of limestone, comprise two examples each from Middens 301 and 303, all fragmentary. Distributions demonstrate the popularity of this artifact category across the site: Midden 301 produced 50 specimens, five of which are complete; Midden 302 two specimens, one complete; and Midden 303 32 specimens, one complete.

The measurements of length and width were limited to the seven complete abraders. The values for length are as follows: Midden 301 (N-5), 72-144mm (x96.6); Midden 302 (N-1), 130mm; Midden 303 (N-1), 91mm; total sample (N-7), 72-144mm (x100.6). The values for width are as follows: Midden 301 (N-5), 55-95mm (x72.0); Midden 302 (N-1), 97mm; Midden 303 (N-1), 78mm; total sample (N-7), 55-97mm (x76.4). The measurement of thickness was determined for 66 complete and fragmentary specimens that retained both faces. Values are as follows: Midden 301 (N-39), 5-33mm (x12.0); Midden 302 (N-2), 11-18mm (x14.5); Midden 303 (N-25), 7-29mm (x12.5); total sample (N-66), 5-33mm (x12.2). The similarity in the thickness of the discrete midden samples, the only reliable measure for purposes of comparison, is to be expected given the presumably common source of the raw material.

Netsinkers

Eight notched netsinkers were recovered. Seven are complete and one is fragmentary. The latter and one complete specimen are from Midden 303: the remainder are from Midden 301. All but two are of sandstone. One of these is schist, the other greywacke: both are from Midden 301. The ranges and means of length, width, thick

ness and weight of the seven complete specimens are as follows: 78-107mm (x90.1); 48-88mm (x71.4); 17-33mm (x23.9); and 125-249gm (x178.7). One specimen features a line of wear between the notches on both faces from abrasion with the net.

Netsinker-Abraders

This unusual combination category is represented by seven specimens that exhibit notches typical of netsinkers in conjunction with unifacial or bifacial wear typical of abraders. The sample comprises three specimens from Midden 301 and four from Midden 303; all but one of the former are complete and all but one, a complete specimen of quartzite from Midden 301, are of sandstone. The combined sample of complete specimens has the following metrical ranges and means: length, 73-106mm (x93.2); width, 47-89mm (x70.0); thickness, 13-23mm (x17.7); and weight, 60-197gms (x117.8). Abrading use of these artifacts is present on one face of four specimens, both faces of two specimens, and on the one extant face of the fragment.

Hammerstones

Ten specimens exhibit pitting or battering on one or more edges indicative of hammer use. The majority are cobbles of igneous or metamorphic rock, irregular or ovoid in shape. All but one are complete. Seven were recovered from Midden 301 and three from Midden 303. The former include two unusual specimens. One is a spherical cobble of Onondaga chert, battered around the entire circumference. The other is a long, naturally-worn piece of amphibolite, with battering confined to the wider or distal end. The nine complete specimens have the following metrical ranges and means: length, 36-85mm (x60.0); width, 29-58mm (x43.0); thickness, 13-50mm (x37.6); and weight, 53-344gm (x141.1).

Hammer-Anvil Stones

Three artifacts represent combined hammer-anvils. One is a fragmentary fire-cracked specimen of igneous rock from Midden 301. It exhibits continuous pitting around the remaining circumference pertaining to hammer use, with discrete zones of pitting on each edge and along the central axis of both faces pertaining to anvil use. Excluding the pitted surfaces, both faces are also ground smooth, suggesting that the artifact also functioned as a mano. The other two specimens are complete and derive from Midden 303. The larger of the two is of metamorphic rock and exhibits continuous hammer pitting around the entire circumference, with discrete central anvil pitting on both flat faces. It has a length, width, thickness and weight of 101mm, 68mm, 37mm, and 470 gms, respectively. The second Midden 301 specimen is an ovoid cobble of limestone. It features hammer pitting at both ends and along one edge, with anvil pitting on most of both faces. One face also exhibits a localized area of scratches. This specimen has a length, width, thickness and weight of 84mm, 42mm, 36mm and 181gms, respectively.

Anvil Stones

Four specimens exhibit discrete areas of pitting on one or both faces indicative of anvil use. One specimen is from Midden 303. It is complete and almost spherical in shape and features a single zone of pitting. The artifact, of metamorphic rock, has a length, width, thickness and weight of 72mm, 71mm, 66mm and 563gms, respectively. One complete specimen and two fragments are from Midden 301. All feature bifacial zones of pitting and are of metamorphic rock. One of the fragments also features a slightly smooth face suggesting mano use. The complete anvil has a length, width, thickness and weight of 80mm, 51mm, 47mm, and 261gms, respectively.

Manos

Three manos were recovered. All are from Midden 301. One specimen is a fire-cracked fragment. The other two are ovoid cobbles with convex, smoothly-ground faces. The respective length, width, thickness and weight of the

latter are 77mm, 68mm, 47mm and 360gms; and 67mm, 60mm, 37mm, and 227gms. All are of metamorphic rock.

Miscellaneous

The specimens considered here comprise one celt fragment, one miscellaneous stone object, three miscellaneous modified ground stone items and 65 ground stone fragments. The celt fragment (Figure 13:a) presents part of the bit portion of a complete artifact evidently broke in use. It is well-finished, is manufactured of amphibolite, and derives from Midden 301.

The miscellaneous stone artifact resembles a champagne cork, with a rounded cap of chert and a tapering stem of soft limestone (Figure 13:b). The specimen has been burned and portions of the cap extruding down on to the stem have flaked away in the process. The surface of the cap is smooth from handling or natural weathering and the softer stem also appears to be weathered. This artifact was recovered in the surface-to-subsoil excavation of a subsquare in Midden 303 in association with Iroquoian diagnostics, although abundant Middle Woodland remains were present within a few meters. An identical specimen is present in a private collection from the Clearville site or vicinity, recently donated to the Southwestern Office of the Heritage Branch, Ministry of Citizenship and Culture (personal observation).

The three specimens categorized as modified ground stone are cobbles with somewhat smooth surfaces. These may be natural. The 65 pieces categorized as ground stone fragments are all fire-cracked. They may include portions of rough stone tools used as pot boilers.

Fire-Cracked Rock

As in the other excavations, fire-cracked rock from the Pond Mills site was collected for later laboratory washing, examination and weighing. The site produced a total of 50,575 grams. Midden 301 produced 24,500gms: 36 subsquares from this unit (32%) lack fire-cracked rock. Midden 302 produced a total of 2,650gm from the two excavated subsquares. Midden 303 produced 23,425 gm: 15 subsquares (27%) lack fire-cracked rock. Comparisons from the two main excavation units indicate that Midden 303 has a greater abundance of fire-cracked rock than Midden 301, producing almost the same quantity from an excavated area half the extent.

Bone Tools

As in the previous analyses in this report, the bone tool artifact class actually subsumes specimens of other materials. No artifacts of fresh-water or marine shell were, however, recovered. The general sample is small but varied.

Modified Deer Phalange

This category comprises the most common modified bone artifact: 33 were found. Thirty of the specimens correspond to the cup-and-pin game variety of modified deer phalange. On each specimen one end has been removed to expose the marrow cavity: the other end has been perforated. The perforations have been effected by a variety of techniques, alone or in combination, employing drilling, scoring and grinding. Table 19 summarizes relevant data. As indicated, specimens that are ground and

Technique	Distal End		Proximal End		Total
	Midden 301	Midden 303	Midden 301	Midden 303	
Drilled	3	7			10
Scored and Drilled		4			4
Ground and Drilled	3	9		1	13
Scored, Ground and Drilled		2		1	3
<i>Subtotal</i>	6	22		2	
Total	28		2		30

drilled are most common (N-13), followed by specimens which are merely drilled (N-10). Grinding appears to have been done with a relatively broad convex-edged instrument, perhaps the rounded edge of an abrader. Of the 30 cup-and-pin variety phalange the majority consist of a modified distal end (N-28), the minority of a modified proximal end (N-2). Two examples are illustrated: a distal end perforated by drilling alone (Figure 13:c); and a proximal end perforated by scoring, grinding and drilling (Figure 13:d). Measurements were confined to length and hole diameter. The results are as follows; length (N-21), 12-33mm ($\times 18.3$); and hole diameter (N-30), 1-3mm ($\times 2.1$). The distributional data demonstrate a marked concentration of cup-and-pin variety phalange in Midden 303: 28 of the total of 30 specimens. Included in the above are some shorter specimens that could be classified as distal end beads.

Three other deer phalange exhibit different forms of modification. On two this is confined to the removal of one end, exposing the marrow cavity. One is a distal end, the other a proximal end. These could represent unfinished specimens or even wastage of the cup and pin variety. Single examples of this kind were found in each of middens 301 and 303. These have a length of 26mm and 35mm, respectively. The remaining deer phalanx has had

both ends removed and carefully ground. The resulting midsection represents a relatively rare form of bone bead. The specimen has a length of 25mm. It was found in Midden 303.

Bone Awls

Thirteen bone awls were recovered, eight from Midden 301 and five from Midden 303. The combined sample includes four fragments (one tip, one mid-section and two proximal sections) and nine complete awls. The latter comprise eight splinter awls, two of which retain complete articular long bone ends, and one awl manufactured from a catfish spine. The latter, one with an articular end, and three splinter fragment awls are from Midden 303. An example is illustrated in Figure 13:e.

Bone Beads

Bone beads comprise virtually the only decorative artifact in the 1983 collection: nine were found. Five specimens are longitudinally split fragments of finished beads, three are complete and finished beads, and one is an unfinished bead. All were manufactured by scoring and snapping: the unfinished specimen is scored and snapped at both ends

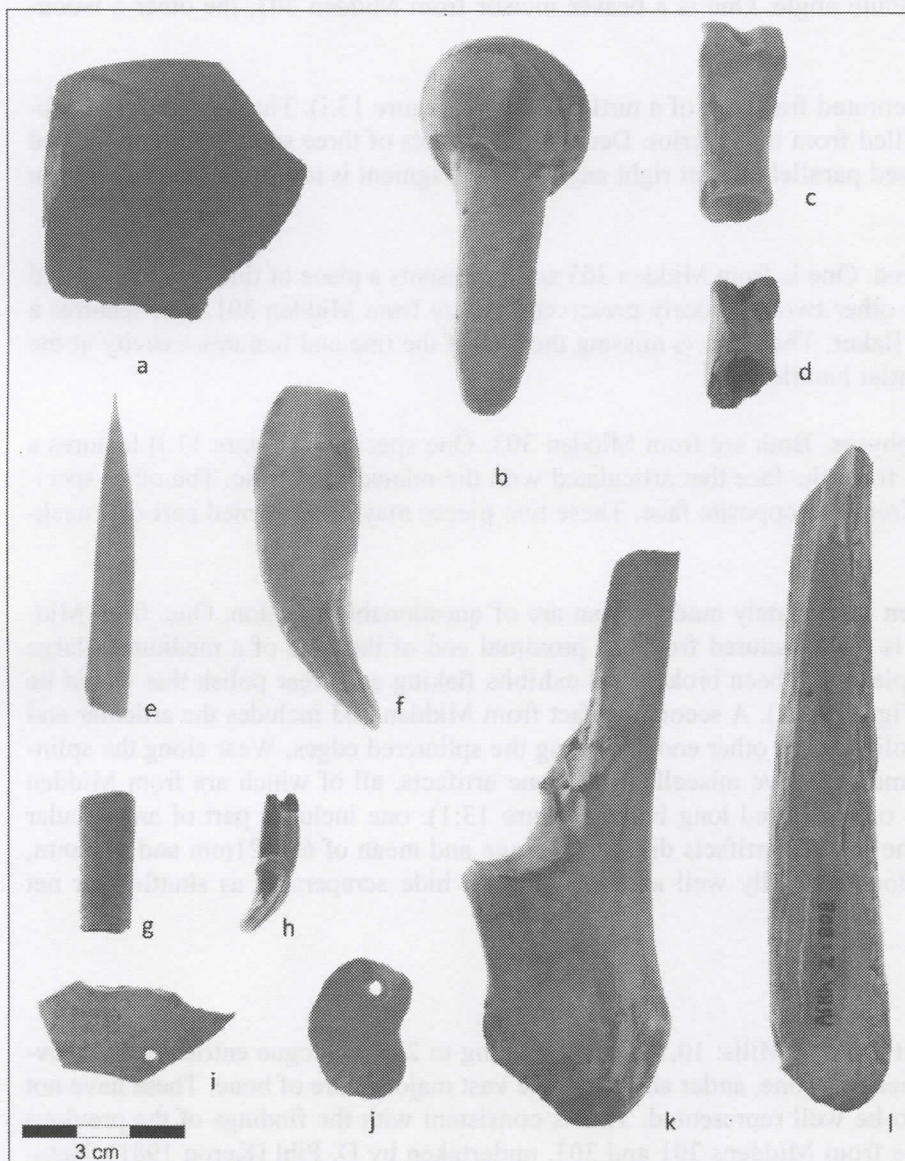


Figure 13: Pond Mills Site; Assorted Ground Stone and Bone Artifacts

and partially scored in the middle. Grinding of the ends represents the last step of the manufacturing process and is present on all but the latter. An example is illustrated Figure 13:g. Middens 301 and 303 produced four beads each: the remaining bead is from Midden 302. An additional specimen manufactured from a deer phalanx, from Midden 303, has already been described.

Miscellaneous

This catch-all subsumes specimens of questionable function and poorly-represented categories, as detailed herine. Two modified canines were recovered. One is a dog or wolf canine pendant. It has been drilled for suspension and is broken at the hole Figure 13:h). The other is a bear canine (13:f). The root end of this specimen has been removed to expose the interior cavity and the resultant edge has been carefully ground and polished. Both are from Midden 301.

Two modified incisors were also recovered. Both feature bit edges in which the labial surfaces have been bevelled by grinding to produce a more acute angle. One is a beaver incisor from Midden 303, the other a woodchuck incisor from Midden 301.

Midden 303 produced a drilled and decorated fragment of a turtle carapace (Figure 13:i). The specimen is perforated by a single hole, uniconically drilled from the exterior. Decoration consists of three small shallowly drilled holes in a line, and two shallowly incised parallel lines at right angles. The fragment is too small to determine an overall pattern to this decoration.

Three antler tine artifacts were recovered. One is from Midden 303 and represents a piece of tine wastage, scored and snapped 50 cm from the end. The other two are poorly preserved and are from Midden 301. One features a rounded tine end and may represent a flaker. The other is missing the end of the tine and features a cavity at the opposite end. This may represent an antler handle.

Two other artifacts are perforated epiphyses. Both are from Midden 303. One specimen (Figure 13:j) features a hole that has been uniconically drilled from the face that articulated with the related long bone. The other specimen has had a hole punched through from the opposite face. These two pieces may have formed part of a necklace.

Seven other artifacts of bone have been deliberately modified but are of questionable function. One, from Midden 303, has a length of 117mm and is manufactured from the proximal end of the ulna of a medium-to-large mammal. The solid distal end of this piece has been broken and exhibits flaking and wear polish that would be consistent with wedge or chisel use (Figure 13:k). A second artifact from Midden 303 includes the articular end of a splintered long bone, with wear polish at the other end and along the splintered edges. Wear along the splintered edges is also featured on the remaining five miscellaneous bone artifacts, all of which are from Midden 301. All of these represent fragments of splintered long bones (Figure 13:l): one includes part of an articular end. The measurement of length for the last six artifacts displays a range and mean of 61-121mm and 91.6mm, respectively. These could have functioned equally well as either knives, hide scrapers or as shuttles for net manufacturing.

Faunal and Floral Remains

Faunal remains are relatively abundant at Pond Mills: 10,393gm pertaining to 220 catalogue entries were recovered. Although the above lump specimens of bone, antler and shell, the vast majority are of bone. These have not yet to be analysed, but deer appears to be well represented. This is consistent with the findings of the previous analysis of a small quantity of remains from Middens 301 and 303, undertaken by D. Pihl (Keron 1981). Naturally, the present sample subsumes a wider range, including such mammals as dog or wolf, bear, beaver and woodchuck, as well as fish, birds and amphibians.

Floral remains comprise charcoal and carbonized plant remains. Charcoal is represented by a total weight of 2,382gm pertaining to 206 catalogue numbers. Carbonized plant remains are much less common and are represented by 44 pieces with a total weight of 27gms pertaining to 33 catalogue numbers. Microscopic carbonized plant remains are also potentially present in the screened residue from float samples: these comprise 99 catalogue entries with a total weight of 1,436gm. To date none of the above has been analysed; although it may be stated that the only recognizable carbonized plant remains consist of corn kernels. This is consistent with the findings of a small sample from Midden 301 previously analysed by R. Fecteau (Keron 1981). Layers 3-5 of Midden 303 produced a small percentage of the total floral remains. Layer 3 produced 22gm of charcoal and one corn kernel fragment; Layer 4, 9gm of charcoal and one corn kernel; and Layer 5, 116gm of charcoal and two pieces of carbonized plant remains. The latter subsume a corn kernel and what appears to be a fragment of bark.

MIDDLE WOODLAND ANALYSIS

Fragments of eight pre-Middleport vessels were recovered in the 1983 excavations: these constitute the only unequivocal evidence of pre-Iroquoian occupation(s) at Pond Mills, not excluding the corner-notched end scrapers in the Jury collection (Figure 12:j-p) and the range of pre-Iroquoian bifaces described elsewhere in this report. The vessels in question have been accorded alphabetical designations. Seven of the eight (vessels A-D, F-H) were recovered from Midden 303, in partial stratigraphic context. The remaining vessel, Vessel E, was recovered in an unstratified context in Midden 301.

The fragments of the eight vessels were segregated and subjected to a vessel sort by writer on the basis of stratigraphic evidence and intrinsic characteristics. They were then kindly examined by Robert H. Pihl. Analyses presented here are based largely on his detailed observations on the collection. Horizontal distributional data for the Midden 303 vessels are presented in Figure 15. Vertical and stratigraphic contexts for these vessels are discussed with reference to the Midden 303 profiles presented as Figure 2 in Part 3A (see KEWA 2009 #4 and 5).

Vessels A, B, C and H pertain to the Middle Woodland Saugeen Culture. Vessel E pertains to the late Middle Woodland or Middle to Late Woodland transitional Princess Point Culture. The remaining vessels, Vessels D, F and G, also appear to pre-date the Middleport component and may pertain to non-indigenous occupations or contacts in the period ca. A.D. 600-900.

Vessel A (Figure 14:j-m) is the best represented of the vessels. It comprises 182 sherds included four rims, seven neck-shoulder sherds, 168 body sherds and three (matched) basal sherds. Although a reconstruction has not been possible it is evident that this was a relatively large vessel with a slightly outflaring rim, slightly constricted neck, gently rounded shoulder and conical base. Vessel A has a lip and neck thickness of 5-7mm, a body thickness of 5-10mm, and a basal thickness of 9-13mm. Portions of both the interior and exterior have sloughed off or weathered away. The interior body treatment appears to vary from smooth to smooth with striae, to scarified; a few sherds exhibit horizontal over vertical striae indicative of wiping in two directions. Channeling, horizontal, vertical or both, is also present on several body sherd interiors. The interior of the neck of the vessel is smooth. Interior rim decoration defines an upper rim height of 19 mm and consists of opposed oblique impressions (right to left above left to right) executed by a pseudo scallop shell stamp. The same decorative technique has been applied to the lip and entire vessel exterior. The lip is rounded in form and decorated with oblique (right to left) impressions. The exterior rim motif consists of oblique (right to left) impressions above horizontals on the upper neck. The horizontals give way on the lower neck to opposed oblique stamps slanting from left to right. These form a continuous herring-bone motif around the vessel and down to the conical base. Pihl infers the use of an anvil in the manufacture of Vessel A; none of the sherds feature coil breaks.

While fragments of Vessel A were recovered from an area approximately six meters in diameter, the vast majority of the sherds were found in an area of a few square meters in the south-central part of Midden 303. Only three of the 182 sherds were recovered in units excavated all to subsoil for which no stratigraphic context was noted or recorded. These, from the southern and eastern periphery of the Vessel A distribution, were derived

from depths of 0-19cm and 0-16cm, respectively. All other Vessel A sherds were recovered from Layer 5, at depths ranging from a minimum of 17-20cm to a maximum of 28-36cm.

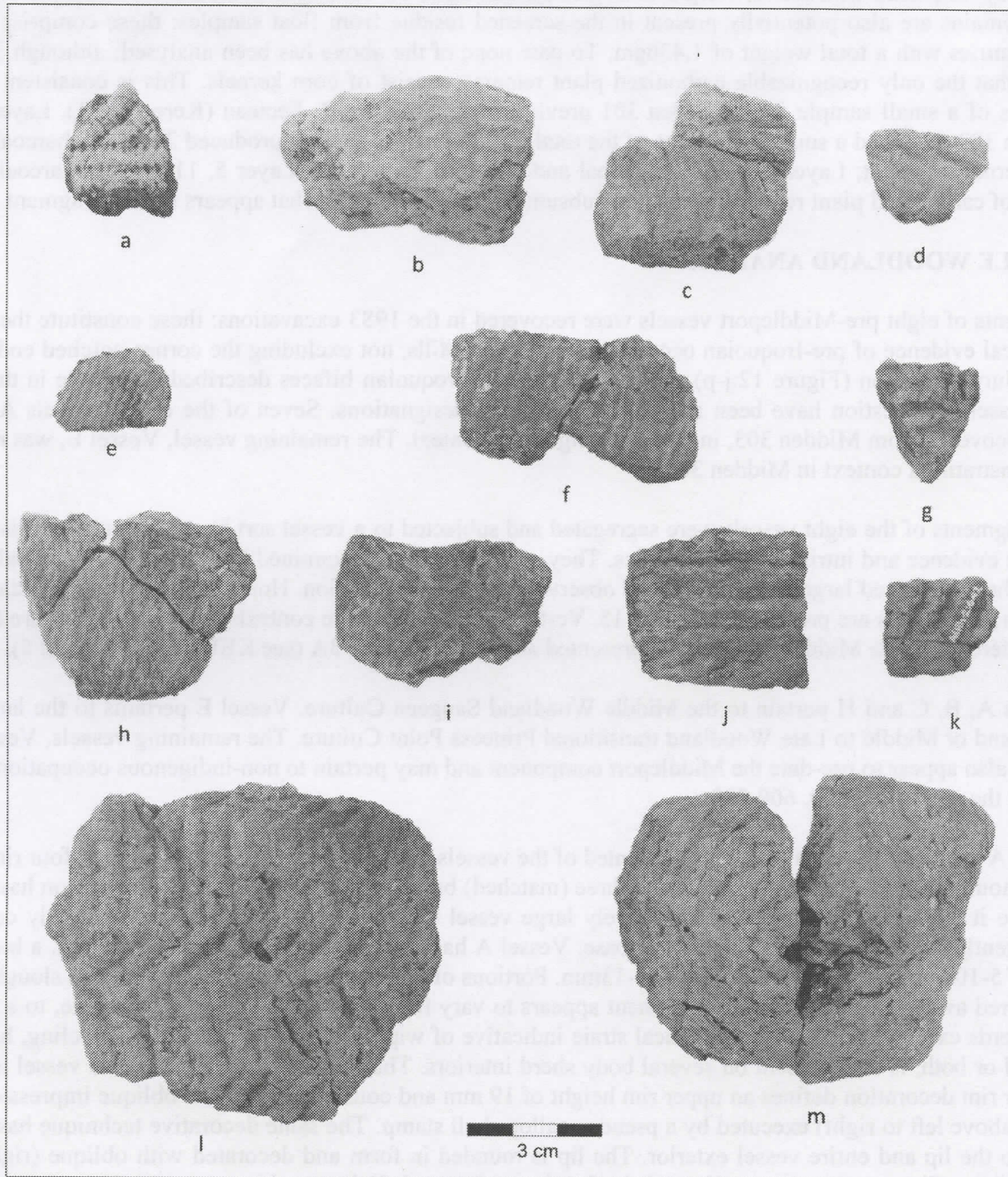


Figure 14: Pond Mills Site; Middle Woodland Ceramics

Vessel B (Figure 14:b) is represented by three body sherds. Thicknesses, determinable for two, are 11 mm and 14 mm. The interiors are smooth; exteriors are decorated by a rocker dentate motif of unknown orientation. The Vessel B sherds were recovered from two excavation units six meters apart. One sherd was derived from the southeast corner of the Midden 303 excavation, with a depth of 0-16cm (subsoil). A second sherd was found in the north central part of the midden in Layer 5 (38-43cm) beneath pot hunters' backdirt. The third sherd attributed to Vessel B was recovered from the south central part of the midden, also in Layer 5 (28-36cm).

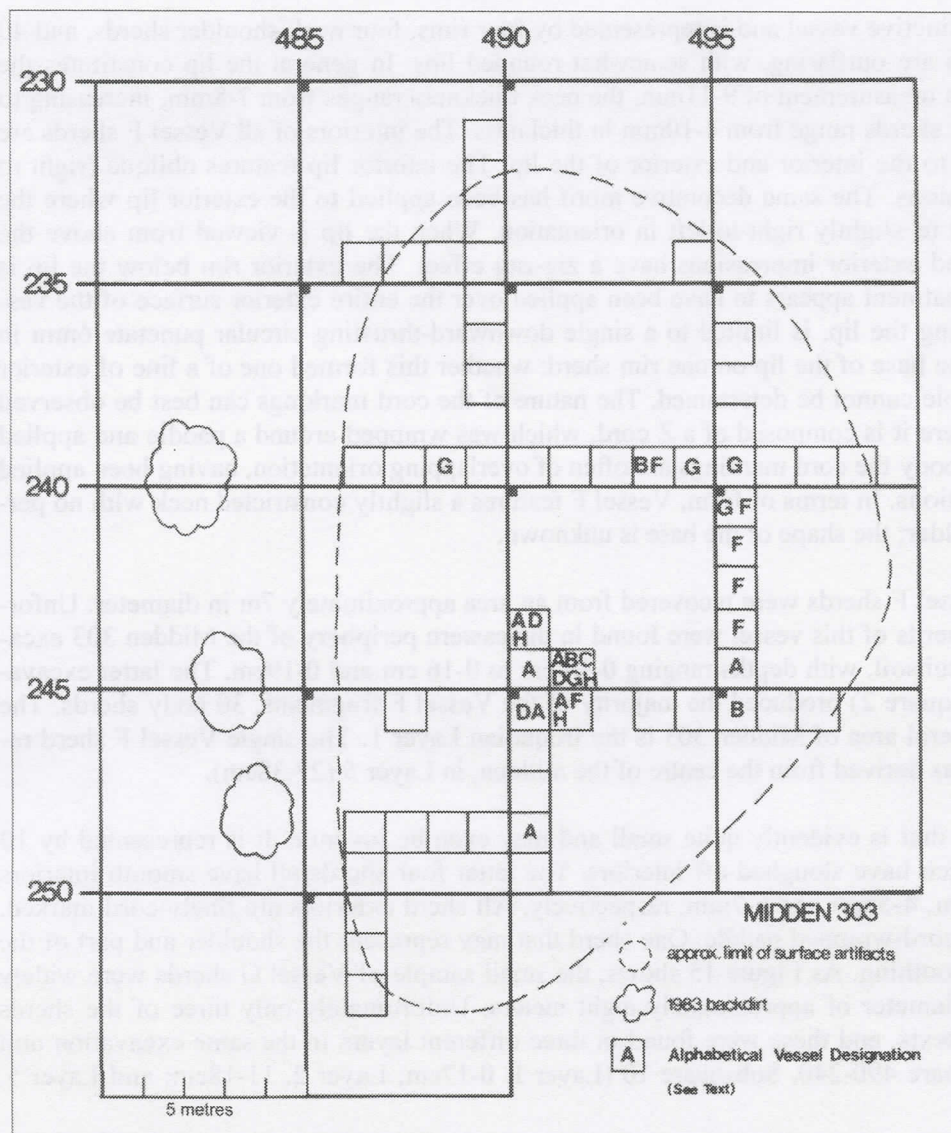


Figure 15: Pond Mills Site; Midden 303 Distribution of Pre-Iroquoian Vessels A-D, F-G

exterior rim feature stamped decorations executed by the same linear or slightly crescent shaped tool. At the lip-exterior juncture these take the form of oblique (right to left) impressions. The exterior motif consists of two opposed rows of oblique impressions (left to right above right to left) above plain. The Vessel D sherds were recovered from three adjoining subsquares in the south-central part of Midden 303. The stratigraphic context is available for one sherd, a rim from Layer 5 (28-36cm).

Vessel E (Figure 14:a) Vessel E, the only one of the vessels considered here that was recovered from Midden 301, is represented by a single neck-shoulder sherd. The sherd has a thickness of 10mm and is finely grit-tempered and well fired. It has a smooth interior and exterior. The exterior decorative motif is executed by cord wrapped stick and consists of obliques (right to left) over horizontals, these two zones apparently conforming to the lower rim and neck, respectively. Microscopic examination shows that the stick used for the tool was quite square and sharp-edged in cross-section. The Vessel E sherd was recovered in the centre of the Midden 301 excavation, in a subsquare excavated all to subsoil (0-22cm). As mentioned elsewhere, this midden was not stratified.

Vessel C (Figure 14:c) is also represented by three body sherds. Thicknesses range from 9-10mm. The interiors are smooth with some evidence of wiping in the form of shallow striae; anvil marks are also present. The exteriors are decorated by vertical rocker stamping over or under horizontal gashes. The tool appears to have been pseudo scallop shell although the wavy lines are very faint. The above sherds were all recovered from Layer 5 (28-36 cm) in the south central part of the midden.

Vessel D (Figure 14:d-f) is represented by three rims, one fragmentary rim sherd and two neck-shoulder sherds: these are too incomplete to permit the determination of a rim profile or upper rim height. The interior surfaces are quite rough and may even represent sloughing although a single row of encircling interior punctates is present well below the lip. The lip and neck thickness are both 8 mm and the lip is rounded in form. The exterior rim and neck are smooth. Both lip and

Vessel F (Figure 14:g-i) is a distinctive vessel and is represented by four rims, four neck-shoulder sherds, and 40 body sherds. In profile the rims are outflaring, with somewhat rounded lips. In general the lip constitutes the thickest part of the vessel, with a measurement of 9-11mm; the neck thickness ranges from 7-8mm, increasing to 10 mm at the shoulder; the body sherds range from 4-10mm in thickness. The interiors of all Vessel F sherds are smooth. Decoration is confined to the interior and exterior of the lip. The interior lip features oblique (right to left) cord-wrapped cord impressions. The same decorative motif has been applied to the exterior lip where the impressions range from vertical to slightly right-to-left in orientation. When the lip is viewed from above the combination of these interior and exterior impressions have a zig-zag effect. The exterior rim below the lip is heavily cord marked and this treatment appears to have been applied over the entire exterior surface of the vessel. Exterior decoration, excepting the lip, is limited to a single downward-thrusting circular punctate 6mm in diameter, located 8mm below the base of the lip on one rim sherd: whether this formed one of a line of exterior punctates on the vessel as a whole cannot be determined. The nature of the cord markings can best be observed on the neck-shoulder sherds where it is composed of a Z cord, which was wrapped around a paddle and applied obliquely (right to left). On the body the cord markings are often of overlapping orientation, having been applied in as many as two or three directions. In terms of form, Vessel F features a slightly constricted neck with no perceptible demarcation at the shoulder; the shape of the base is unknown.

As Figure 15 illustrates, the Vessel F sherds were recovered from an area approximately 7m in diameter. Unfortunately, all but one of the 48 sherds of this vessel were found in the eastern periphery of the Midden 303 excavation in units excavated all to subsoil, with depths ranging 0-14 cm to 0-16 cm and 0-19cm. The latter excavation unit (Square 495-240, Subsquare 2) produced the majority of the Vessel F fragments, 30 body sherds. The only obvious stratum is this general area of Midden 303 is the Iroquoian Layer 1. The single Vessel F sherd recovered in a stratified context was derived from the centre of the midden, in Layer 5 (27-38cm).

Vessel G is a well-made vessel that is evidently quite small and may even be juvenile. It is represented by 10 body sherds, all but four of which have sloughed-off interiors. The latter four sherds all have smooth interiors with thicknesses of 3mm, 3-5mm, 4-5mm and 6-7mm, respectively. All sherd exteriors are finely cord marked, the treatment executed by an S cord-wrapped paddle. One sherd that may represent the shoulder and part of the neck exhibits a zone of faint smoothing. As Figure 15 shows, the small sample of Vessel G sherds were widely scattered over an area with a diameter of approximately eight meters. Unfortunately only three of the sherds were recovered in stratified contexts, and these were found in three different layers in the same excavation unit in the centre of the midden: Square 490-240, Subsquare 10 (Layer 1, 0-17cm; Layer 2, 11-18cm; and Layer 5, 28-36cm).

Vessel H is represented by five body sherds. Thicknesses vary from 9 to 11mm. Interiors are smoothed and vertically (?) wiped. Exteriors feature a smoothed-over cord treatment. The cord marking appears to be vertical or slightly oblique and the nature of the match on two adjoining sherds suggest a coil break. The Vessel H sherds were derived from three adjacent excavation units in the south central part of Midden 303, and all were recovered from Layer 5, at depths of 17-20cm, 26-29cm, and 28-36cm.

DISCUSSION AND INTERPRETATIONS

The lower priority accorded to the Pond Mills site by the C.O.E.D. project compared to Magrath and Willcock resulted in more restricted investigations in 1983. Despite their limited extent, these achieved the stated aims of the project in assessing the present condition of the site and in gathering new information that will prove invaluable in planning more detailed salvage and/or research excavations.

As presently defined, the site covers approximately one acre and is primarily a Late Woodland component with four middens. The C.O.E.D. investigations also demonstrated evidence of multiple pre-Iroquoian occupations best exemplified by the lowest strata of Midden 303. It seems probable that remains pertaining to one or more of these occupations extend outside the area considered here: thus Keron's sherd and debitage from north of Brad-

ley Avenue suggest at the minimum Iroquoian activities on the edge of the South Pond, while his fire-cracked rock and flakes northeast of Midden 303 may well represent another as yet undefined Iroquoian midden. At the same time, it must be stated that pre-Iroquoian deposits may well be more extensive than recognized to date. The pattern inferred from both Willcock and Pond Mills is that although Late Woodland middens can generally be recognized on the surface of a woodlot, Middle Woodland remains occur at or near the subsoil interface in the London area and are only susceptible to discovery by excavation.

The distribution of cultural remains in and around the area of the 1983 investigations suggests that what might be termed the greater Pond Mills site has undergone some degree of previously unrecognized destruction, specifically in the creation of the Bradley Avenue embankment and in the grading of the lane which runs south. In general, however, the site is well preserved, and disturbance is mostly confined to past excavations on middens 302 and 303. The extent of the disturbance of Midden 302 is unknown although much of the deposit evidently remains intact. Concerning Midden 303, the C.O.E.D. investigations demonstrate much better preservation than previously assumed. At the same time, the C.O.E.D. investigations show that the outer fringes of Midden 303 were totally undisturbed by previous excavation. Altogether, the evidence suggests that most of Jury's excavation and the recent pot hunting have been largely restricted to the upper levels of the central portion of Midden 303, and that Jury's excavation involved a smaller area than the 20 feet by 30 feet reported.

The Saugeen occupation at Pond Mills is the best defined of the pre-Iroquoian manifestations: as presently recognized it is confined to Layer 5 of Midden 303 at the south end of the site. Vessels A, B, C and H, which are attributed to this Middle Woodland occupation, feature a number of traits typical of or present on Saugeen pottery (Finlayson 1977:616-620). Pertinent traits include vessel form with a slightly constricted neck, rounded shoulder, and concical base (Vessel A); smoothed and/or wiped or scraped interiors (Vessels A, B, C and H); the exterior rim decorative technique pseudo scallop shell impressed (Vessel A); the presence of decoration on bodies including the techniques of pseudo scallop shell impressed (Vessel A) and rocker stamped (Vessel C) and of rocker dentate (Vessel B); the presence of smoothed-over cord body sherds (Vessel H); the decorative motifs of opposed obliques on the interior rim, obliques on the lip, and obliques above horizontals on the upper rim and neck (Vessel A); and the presence of decoration over the entire vessel, all executed by the same tool (Vessel A). The possible coil break on Vessel H and the anvil marks on the interiors of vessels A and C may reflect another aspect of Saugeen pottery manufacture that has been documented by Finlayson (1977:616): the use of the paddle and anvil technique to bond coils and shape vessels.

It may be assumed that a certain proportion of the non-ceramic artifacts and refuse from Layer 5 of Midden 303 also pertains to the Saugeen occupation. However, it would have been difficult if not impossible to effect a complete separation of the component in the context of the limited test excavations conducted. In consequence, the reader is directed to the various artifact category sections in the analysis where the nature of all other remains recovered from Layer 5 are explicitly discussed. Of all of the artifacts ever recovered from the site, the best candidates for association with the Saugeen ceramics are the corner-notched end scrapers in the Jury Collection (Figure 12:j-q). Contrary to Pearce et al. (1980:34), quoted earlier, the weight of research suggests that scrapers of this type only appear on Iroquoian sites as pre-Iroquoian curios. The presence of examples of exotic cherts among the Jury Pond Mills specimens would further point to a pre-Iroquoian origin, as would the absence of corner-notched scrapers among the abundant Iroquoian lithics recovered from the site in 1983. A review of the literature indicates that corner-notched scrapers are a rare trait of the Saugeen Culture, present on some sites and absent on others. The best representation known to this writer is the Muscat site (AdHg-2), a Saugeen hunting camp on the Lake Erie shore of Elgin County, where several examples have been recovered by surface collection in association with Jack's Reef Corner-Notched points and Saugeen ceramics (personal observation; Quigley et al. 1982). Granting that scrapers of this type are a Saugeen trait (though not exclusively so), the Jury specimens may be attributable to the Saugeen occupation at Pond Mills. Why other examples were not recovered in 1983 remains a mystery. Possibly Jury's excavations hit a cache or an activity area. As with Willcock, and for the same reasons cited there, the small collection of Saugeen ceramics cannot be dated by comparative analysis and on an intrinsic basis can only be referred to the broad temporal span of the Saugeen Culture.

The remaining four pre-Iroquoian vessels appear to pertain to somewhat later and less well defined occupations of the late Middle Woodland or transitional Woodland period. Vessel E, from Midden 301, most closely resembles ceramics of the Grand River Focus of the Princess Point Culture (Stothers 1977), which is generally acknowledged as ancestral to the Glen Meyer Branch of the Ontario Iroquois Tradition (Noble and Kenyon 1972; Stothers 1977). Vessel F, while similar to some Princess Point ceramics, is more akin to the Wayne Cord-marked type (Fitting 1965:158-159), a variant of Wayne Ware that is characteristic of the roughly contemporary Wayne Tradition (Fitting 1965, 1975). This late Middle Woodland manifestation, centred in southern Michigan, has been dated within Ontario to the 9th century A.D. at several components of the Point Pelee Period II (Keenlyside 1978); it was originally subsumed by Stothers (1977) as the middle phase expression of the Point Pelee Focus of the Princess Point Culture (Fox 1982). Elsewhere in Ontario, Wayne Wares have been reported as far east as the Delaware area just west of London (Ibid:22). The example at Pond Mills, if in fact not Princess Point, may pertain to contemporary influences from the east or to a separate occupation altogether. The significance of vessels D and G is even less clear as the few sherds available are insufficient to permit even tentative cultural designations. Vessel G resembles Vessel F in having exterior cord marking but is otherwise dissimilar. Vessel D, judged Middle Woodland by Rob Pihl on the basis of general characteristics, looks more Glen Meyer to the writer.

Unfortunately, excavation unfortunately provided only equivocal stratigraphic context for vessels F, G and D. The few sherds from these that were attributed to specific layers were all derived from a subsquare in which the Iroquoian layers 1 and 2 partially interface with the Saugeen Layer. However, it is anticipated that additional field work on Midden 303 could at the very least establish a relative context for the Wayne Ware Vessel F. The majority of sherds from this vessel were recovered from a single subsquare at the base of a large tree and it is the writer's belief that the root system here may obscure a subsurface feature.

The thermoluminescent determination of A.D. 830 ± 230 for the sherd from the Saugeen Vessel A is of questionable significance considering that the results of TL dating for Magrath yielded a mean date some 100 years or more later than expected on the basis of ceramic comparisons, and that the date obtained for the Late Woodland component at Pond Mills is also somewhat later than expected (see discussion below). The lower range of the date could fit within the terminal range of Saugeen proposed by Finlayson (1977:612) of 600-800 A.D. However, acceptance of the Pond Mills date would conflict with current interpretations of events in southern southwestern Ontario during the first millennia A.D., and the date of A.D. 830 ± 230 may thus be objectionable as applied to the southern Saugeen manifestation at Pond Mills or as used as a terminus post quem for the late Middle Woodland occupations that is inferred to have followed.

In the Bruce Peninsula, dates from the late phase Saugeen Area A of the Thede Site have yielded consistently late determinations of A.D. 495 ± 110 (S-622), 690 ± 90 (Gak-2955) and 770 ± 90 (Gak-2953) (Finlayson 1977, Fox 1978), indicating that the late Saugeen phase persisted perhaps as late as the 8th century in the north. Meanwhile, Princess Point in the south has variously been attributed to the period ca. A.D. 600-800 or 900 (Stothers 1977), A.D. 500-800 (Spence and Pihl 1984) and the "*eighth and perhaps seventh century*" (Fox 1982), while the bulk of the calibrated radiocarbon dates may suggest that it primarily dates to the period ca. A.D. 800-1000 (Timmins 1984). In consequence, the Pond Mills date, though acceptable by the standards of the northern Saugeen chronology, post-dates the time in the south when most researchers place the emergence of the Princess Point Culture.

A further problem with the Pond Mills Saugeen thermoluminescent date involves the origins of Princess Point. As initially suggested by Finlayson (1977:611-612) and subsequently supported by osteological analysis (Molto 1979), it appears quite possible that the Princess Point Culture evolved from Saugeen in the southern part of southwestern Ontario. Given this hypothesis, the latest Saugeen sites in the north could be later than those in the south, transitional sites should be present in the south, and the latest Saugeen sites in the south should generally pre-date the earliest Princess Point sites (granting some latitude for geographic and temporal variation in the transition). Unfortunately, research has provided little useful information on the matter. Firstly, demonstrably transitional Saugeen-Princess Point sites are unknown, though this may be viewed as a reflection of inadequate

survey rather than a serious objection to the transition hypothesis. Secondly, there are only two radiocarbon-dated Saugeen components in the south, and both have yielded only single dates and are located on the Ausable drainage, far west of the main focus of Princess Point as currently recognized (Fox 1982): the Wyoming Rapids site, dated 150 ± 80 B.C. (1-13,163) (Fox 1983); and the Vandenbygaart site, dated A.D. 670 ± 80 (D1C-425) (Fox 1978). The latter date provides equivocal support for the survival of Saugeen into the late 7th century in the southwest but the same cannot be assumed for the London area or for the heartland of Princess Point further east. Thirdly, the Princess Point Culture is arguably the most poorly dated major cultural entity in the Woodland period in Ontario: the relative sequence of sites and phases based on ceramic seriation has received little support from chronometric dating and no consistent determinations are available to satisfactorily date the emergence of this culture (Timmins 1984:65-68).

Given the above discussion, it follows that research presently offers no firm basis for assessing the thermoluminescent date for the Saugeen component at Pond Mills. Comparisons with the results of other TL dated samples from the Late Woodland Pond Mills and Magrath components suggest that even the lower range of the Saugeen date of A.D. 830 ± 230 A.D. is somewhat too late, but that the error is probably not gross. If true, the Saugeen component would date to the late phase as defined by Finlayson.

The function of the Pond Mills site during the Middle Woodland period is unknown. However, it is clear that this locale attracted a succession of peoples throughout much of prehistory. Archaeology has so far documented occupations during the Middle Woodland, transitional Woodland and Late Woodland, and to these may be added a verbal report of a nineteenth century Indian encampment in the woodlot containing the site (field note entry for August 25, 1983). There can be no doubt that the main and continuing attraction was the concentration of food and other resources in the vicinity. To this day the ponds serve as a staging ground for large flocks of migratory wildfowl in the spring and fall, as well as a fishing spot for local residents. In prehistoric times the area would also have been a focal point for a wide variety of small and medium sized mammals. Of these, deer may have been the most important prey. An examination of the pollen diagram obtained from the North Pond reveals that oak pollen dominated throughout the Woodland period, with lesser amounts of beech, elm, maple, birch and pine, in descending order of frequency (McAndrews 1981: Figure 3(a)). The oak, as a source of mast and a favourite fall source of food for deer, may have lured both deer and hunters to the area in the fall. The locale may also have served as a winter yarding area for deer. To summarize, the vicinity of the ponds would have offered a rich variety of seasonally abundant self-renewing food resources and different resources may well have been exploited at different seasons. With specific regard to the Saugeen settlement and subsistence model described in the Willcock discussion, the nature of the area generally suggests that the Saugeen and transitional Woodland components at Pond Mills represent fall or winter encampments.

The investigation of Late Woodland settlement pattern data at Pond Mills would have entailed more time than was available in the context of the C.O.E.D. project, and the 1983 excavations added nothing to our knowledge of the site in this regard. The presence of several middens would point to the existence of several houses, and the area between middens 301/302 and 303/304 would obviously be a logical one to test, but this does not preclude the possibility of other longhouses north, west and east of the northern middens or west and east of the southern middens.

More concrete data are naturally available on the middens themselves. As stated earlier, the 1983 project salvaged approximately 70% of the unstratified Midden 301 deposit as determined by surface scatter. A comparison of the surface limits with the frequency plots of various artifact categories, however, show that surface extent is not an entirely reliable indicator of midden extent. These plots further demonstrate that Midden 301 is a bilobate deposit and that it extends relatively productive outside the excavated area, particularly to the southwest. Comparable plots for the test trenches of Midden 303 indicate that it also extends outside the area defined by surface scatter, again especially to the southwest. Only future excavation can determine whether these extensions are indeed midden deposits or are living floor deposits of related longhouses.

The function of the Pond Mills site during the Late Woodland occupation may have differed little from that of the earlier Saugeen encampment. Researchers from Jury to Keron and Pearce have all viewed the Late Woodland component as a non-village site. In this regard, it may be noted that earthworks characteristic of many villages in this general time period are absent at Pond Mills. Pending detailed floral and faunal analyses and settlement data, we can only speculate on the function of the site. However, faunal material is quite abundant and includes the remains of deer as well as a variety of other medium to small sized mammals, in addition to fish and fowl. The evidence for fishing is supported by the recovery of netsinkers and the curious combination tool, netsinker-abraders, while hunting is further indicated by the presence of projectile points, although it may be stated that points appear to be uncommon here compared to such sites as Willcock and Lawson. In contrast to the faunal material, floral remains including recognizable cultigens seem to be particularly rare. The Middleport cultural material is thus most consistent with a special function hamlet oriented to hunting, fishing and perhaps gathering. The availability of an abundance of self-renewing edible resources could have permitted a longer and more frequently repeated occupation by a larger population than would have been possible for a strictly agricultural hamlet, where soils were a determinant of site location and soil exhaustion a major restriction to length of occupation. Given the seasonal availability of some potential major food resources such as yarding deer (late fall to winter) and migratory wildfowl (spring and fall), the Pond Mills Late Woodland component may well have been occupied at various times of the year. As mentioned earlier, the oak, which was also dominant in the area during the Late Woodland occupation, would have provided mast as a further attraction to deer and hunters in the fall. The topography of the locale may also have played a role in deer hunting practices: as Keron (1981) observes, *"the site is in a natural position for a chute and pound type of capture as one arm of the chute is formed naturally by topographic features of the ponds and a sharply defined ridge which extends two miles to the northwest."*

None of the interpretations presented would preclude some level of agriculture in subsistence at Pond Mills, and a vast area of the soils preferred by Iroquoians of this time period does exist nearby, but the evidence at hand suggests primarily if not exclusively non-agricultural subsistence activities. One other important activity of undetermined nature is represented by the surprising quantity of flat or slightly dished abraders at Pond Mills. Judging by the cultural remains, the abraders were not used to sharpen or shape stone, bone, antler or shell, at least not to any significant degree. In consideration of this it appears likely that the abraders were used primarily in some activity involving organic material that has not survived. One possibility is suggested by a comment of Father Pierre Joseph-Marie Chaumonot who, on his visit to the Neutral in 1640, observed that they cut their hair by "placing two stones, one over the hair one under and then then hold tight and rub the two stones together..." (Hunter 1982:6). However, this description does not necessarily imply abraders, and hair cutting hardly seems an adequate explanation for the quantity of these artifacts at Pond Mills. Conceivably they were used in some industry involving wood, but no function can at present be inferred. Perhaps the presence of a number of dual function netsinker-abraders may ultimately help provide a key to understanding the phenomenon. Just how large the abrader sample of 84 is may be illustrated by comparison with the Lawson site, where four years of extensive excavations recovered only 28 specimens (Pearce 1980:28-29). Interestingly, one other Iroquoian component in the London area appears to have a high frequency of abraders: the Laidlaw site. Limited excavations at this possible prehistoric Neutral site have produced nine abraders in addition to 20 rims and other artifacts (Pearce et. al. 1980:29-31). Laidlaw is situated 3km southeast of Pond Mills, on a small bluff overlooking Dingman Creek.

The suggested temporal placement of the Pond Mills Late Woodland component in the late Middleport substage, proposed prior to 1983 on the basis of ceramics, receives nothing but support from the vastly increased 1983 sample. More than that, the predominance of the Pound Necked type, which was merely suggestive in the pre-1983 sample of less than two dozen rims, becomes nothing less than remarkable in the total sample now available of 186 rims or 107 vessels. By rim count or vessel count, from Midden 301 to Midden 303, this single pottery type comprises from 77 to 84% of all Late Woodland pottery at the site.

Although Pound Necked is recognized as a dominant type in the Middleport substage (Wright 1966:63), frequencies in the order of 80% are unparalleled in the literature for samples of any reasonable size. The published data for such samples show a peak of Pound Necked popularity at almost 50% on the Pound and Moyer sites (Wright 1966; Wagner et al. 1974; Kapches 1981). The very real potential for confusing Pound Necked with certain other pottery types has been stressed (Lennox and Kenyon 1984) and it would be cogent at this point in the discussion to state that such a potential is negligible in the present sample given the relative occurrence and low frequency of secondary collar decoration and the clear demarcation between collar and neck on most vessels. In short, subjectivity or analyst bias may be ruled out as an important potential explanation for the high frequency of the Pound Necked type at Pond Mills.

Two alternative explanations for the excessive popularity of this type may be offered. Firstly, it is possible that Pound Necked is an extremely effective horizon marker and that, with the present exception, excavations on major sites to date have simply failed to tap a component where the type peaks. According to this scenario, Pound Necked would still be on the rise or already have declined at the periods represented by the Moyer and Pound site occupations. The alternative explanation is that the incidence of Pound Necked is not wholly or at least not always a temporal indicator, and that, at least in some cases, its popularity may reflect some other phenomenon.

Some support for the latter alternative may be derived from the evidence of several hamlets in north London. These were discovered in the course of archaeological resource assessment and non-contract survey in 1981 (Ronto, Windermere, Smallman, Black Kat, Matthews and Colony sites) (Poulton 1982a, b, c), in 1982 (AgHh-62) (Poulton 1983a), and in 1983 (Ivey, Labatt, Woodholme sites) (Pearce 1983b). Subsequent excavations of five of the hamlets (Pearce 1983a, Arnold and Pearce n.d.) have uncovered some interesting differences even though all of the sites are presumed functional equivalents and are attributed to the Lawson village on the basis of general artifact similarities, geographic proximity and the absence of an alternate major village (Arnold and Pearce n.d.). Four of the sites (Ronto, Windermere, Smallman and Woodholme) feature a predominance of Pound Necked vessels with oblique motifs on the collar, as well as a relatively high frequency of interior decoration, the presence of some secondary collar and/or secondary neck decoration, and the presence of trumpet pipes. In contrast, one of the sites (Black Kat) features a predominance of Lawson Incised and Lawson Opposed pottery with either obliques or opposed motifs on the collar, and plain necks and interiors, with an absence of secondary collar and secondary neck decoration. The latter site also features an absence of trumpet pipes together with the presence of an Iroquois Ring pipe, an effigy pipe, and three stone pipes, all traits absent at the other sites. It must be emphasized that the Lawson hamlet artifact samples are small. For example, the richest site has produced only 24 vessels. However, the differences observed do seem to be significant. These differences have been interpreted as evidence that the Black Kat site and the other hamlets were occupied by peoples of a separate matrilineage (Pearce 1983c, Arnold and Pearce n.d.). Assuming this to be the case and assuming the rough contemporaneity of the hamlets and their association with Lawson, the above patterns have one important implication to the matter at hand: the fact that Pound Necked, a pottery type which comprises only 19% at Lawson, apparently comprises from 71 to 100% at some of its hamlets.

Given the inference that pottery types including Pound Necked may sometimes be more social than temporal traits, it is theoretically possible that the Pond Mills site is prehistoric Neutral rather than Middleport. According to this hypothesis, the Pond Mills hamlet may have been occupied by a group with a proclivity for Pound Necked pottery, and the vastly greater quantity of ceramics and all other remains compared to the more sterile Lawson hamlets may only derive from the fact that the renewable resources of the vicinity permitted a lengthier and/or more repeated occupation.

With the evidence available there is presently no way to choose between the two alternative explanations for the high frequency of Pound Necked vessels at Pond Mills. However, a comparison of other traits can at least be used as an independent means of dating the site relative to Lawson. In doing so, it is best to avoid non-ceramic traits that are functionally specific (such as the presence or absence of earthworks and certain artifact categories) as well as ceramic traits that are linked to the complex of traits that make up the Pound Necked pottery type

(such as the frequency of neck decoration, including horizontal neck motifs). The results of the comparisons for select ceramic attributes are tabulated and more fully discussed in the summary section of the manuscript on the C.O.E.D. project: it will be printed in a future issue of KEWA). Little or no difference is apparent between Pond Mills and Lawson in the proportion of collared to collarless vessels, the degree of collar development, the frequency of castellated vessels, in lip form and angle to interior, or in the incidence of secondary collar decoration. Demonstrable differences are evident in castellation form, with later types (squared and turret) confined to Lawson, in the frequency of interior decoration (half as common at Lawson), in the frequency of secondary neck decoration (one-fifth as common at Lawson), and in the frequency of linear-stamped rims (one-third as common at Lawson). Body sherd surface treatments at Pond Mills include a minor representation of ribbed paddling, an earlier trait absent at Lawson. The ceramic pipe types present at Pond Mills are largely duplicated at Lawson (Pearce 1980) and the Plain Trumpet type dominant at the former is also important at the latter, though Elongated Ring, the major type at Lawson, is absent at Pond Mills, as are effigy (a Neutral trait) and several other pipe types.

Reference to the Lawson hamlet research suggests that traits such as the relative frequencies of interior decoration and secondary neck decoration may be social indicators on contemporary sites, but these particular traits, together with linear stamping and ribbed paddling, do show a steady decline through time in the local Iroquoian sequence. These and other traits therefore indicate that Pond Mills is earlier than Lawson and that in general it fits comfortably in the late Middleport substage, as initially suggested by the frequency of Pound Necked pottery. Ironically, the thermoluminescent determination of A.D. 1525 ± 90 would tend to support a Middleport rather than a prehistoric Neutral placement for the Late Woodland component, given the fact that this technique consistently yielded dates of a century or more later than expected for the Magrath site and the Pond Mills Saugeen component.

It is no easy matter to derive an accurate comparative date from the late Middleport placement of this component. With reference to the review of Middleport research in the Willcock site discussion, the Pond Mills site could be placed ca. A.D. 1340 using the chronometric evidence presented by Timmins (1984), ca. A.D. 1400 using the Middleport span suggested by Wright (1966), or ca. A.D. 1450 according to the late survival of Middleport inferred by Finlayson and Byrne (1975).

With the equivocal exception of Nodwell, calibrated radiocarbon dates consistently place the transition from Middleport to Neutral ca. A.D. 1330-1350 (Timmins 1984:106). The only contradictory chronometric evidence is the mid-fifteenth century date for the late Middleport Crawford Lake site near Milton. This date, therefore, assumes considerable importance in dating the end of Middleport in general.

Rim sherd seriation of the 1973 Crawford Lake sample indicated that the site placed in the mid-to-late Middleport substage, intermediary to the Robb and Millroy sites near Toronto, with a suggested date of ca. A.D. 1380 based on a Middleport time span of A.D. 1350-1400 (Finlayson and Matson 1974:67-69). In contrast to this relative date, the researchers applied an unusual absolute dating technique, correlating the occupation of the village with a series of varved corn pollen bearing sediments in the nearby lake dating A.D. 1435-1459 (Ibid; Finlayson and Byrne 1975).

As noted by Finlayson and Byrne (1975:34), the above correlation indicated a revision to the then-current (J.V. Wright) chronology for Middleport. More recent research, however, brings the 15th century date for Crawford Lake into question. Firstly, the only radiocarbon dated site in the Iroquoian sequence of the Crawford Lake area, the early prehistoric Neutral Pipeline site (Busby 1979), has been dated earlier than the Middleport component at Crawford Lake. Pipeline has yielded a single date of A.D. 1405 ± 85 (UGa-1905) which calibrates to A.D. 1350 ± 70 (Timmins 1984:102). Secondly, the only radiocarbon dated site in the Robb-Millroy sequence, the late Middleport New site, seriates intermediary to Robb and Millroy (Kapches 1981) just as Crawford Lake does, yet New is dated A.D. 1310 ± 75 (DIC-1252), calibrated to A.D. 1325 ± 45 (Timmins 1984:94), over a century before the suggested span of the Crawford Lake site. Seriation and radiocarbon dating therefore both disagree with

a 15th century date for Crawford Lake.

It is possible that the source of the problem lies in the correlation of the site and the sediments. Palynological studies of the Crawford Lake varves have documented native agriculture in the vicinity of the lake over a long period, from A.D. 1300 to 1665. Thus the Crawford Lake site itself may pertain to earlier peaks in corn pollen, the earliest of which are represented in sediments dating A.D. 1310-24 and 1355-69 (Finlayson and Byrne 1976:31). These earlier dates would be more consistent with the evidence of radiocarbon dating and rim sherd seriation. Concurrently, it is possible that the Crawford Lake site is not a single occupation village as has been assumed. Excavations in 1982 discovered the first examples of overlapping longhouses (Poulton 1983b:28-29) and the relative sequence of the structures could suggest that the two major longhouse orientations at Crawford Lake represent non-contemporaneous occupations. In this regard it should be noted that the vessel typology that resulted from the 1982 investigations seriates earlier than the 1973 sample (Poulton 1983b:29,36), a fact which could derive from intra-site temporal variation.

Only future research at the Crawford Lake site can assess the validity or importance of the points raised here, but pending inter-house comparisons and radiocarbon dates the correlation of the site with the fifteenth century sediments should perhaps best be considered an hypothesis rather than a fact. As such, the weight of evidence would place the end of Middleport somewhat earlier. Accordingly, the late Middleport component at Pond Mills would date toward the beginning of the 14th century by Timmins' chronology, and near the end of the same century by Wright's.

Foreign influences in the Pond Mills Middleport collection are limited to a single Parker Festooned vessel, the presence of the self-slipped body surface treatment and an unusual clay pipe. All are attributed to contacts with or influences from peoples of the Wolf Phase of the Younger Tradition, a cultural manifestation in southeastern Michigan and extreme southwestern Ontario (Fitting 1965, 1975; Fitting and Zurel 1976). Fitting (1975:159) has suggested a temporal span for the Wolf Phase ca. A.D. 1250-1450, and it was certainly in existence during the 14th century, contemporary with the Middle Ontario Iroquois. It would appear that the Wolf Phase peoples may have abandoned Michigan for southwestern Ontario ca. A.D. 1400 and that the Wolf Phase occupation in this province continued into the prehistoric Neutral period at least to the time of the Lawson site ca. A.D. 1500 (Fox 1980:7; Pearce 1980: 34-36).

Parker Festooned pottery has a somewhat wider temporal and geographic range than the Wolf Phase itself, but it is a dominant type of that phase and Wolf Phase peoples constitute the most probable source of inspiration for the vessel at Pond Mills. Concurrently, the self-slipped body surface treatment appears to be common on Wolf Phase vessels. The ceramic pipe here linked with the above traits is more problematic, as nothing corresponding to this specimen is represented in the literature examined to date. As described in the analysis and illustrated in Figure 10, the pipe features a large impressed arrow motif on the one observable side of the bowl. It may further be noted that the outer edges of what remain of the bowl and stem have been heavily battered. The writer is aware of only one other occurrence of an arrow motif on a rim of the Parker Festooned type from the Lawson site (Wintemberg 1939, Plate IV, Figure 20). The distribution of Wolf Phase traits within the Pond Mills site shows some clustering. All of the sherds of the vessel recovered in 1983 were derived from three contiguous subsquares in Midden 303, and the pipe was found within two meters of these. The matching Parker Festooned rim found by Jury may also be presumed to derive from Midden 303. Self-slipped body sherds, which comprise the second most popular treatment at Pond Mills (15.7%), were equally divided between Middens 301 and 303. The lack of patently non-Iroquoian Late Woodland rims from Midden 301 would further suggest that the treatment was applied to otherwise typical Iroquoian vessels at Pond Mills.

The only other evidence of non-local contacts or trade at Pond Mills consists of the presence of Onondaga, Ancaster and Kettle Point cherts. Readier access or stronger links to Iroquoian peoples to the south and east may be indicated by the predominance of Onondaga chert (33%) compared to the far less common Kettle Point chert (10%), the only other notable import.

The analysis of Late Woodland remains incorporated a detailed comparison between middens 301 and 303 for virtually all artifact and refuse categories. A small amount of pre-Iroquoian refuse is undoubtedly included in the Midden 303 sample, but the general sterility of the lower strata and the careful excavation suggest that this contamination is not an important source of bias. Another recognized source of potential bias is in the relative extent of excavations and resulting sample size. The Midden 301 sample is derived from an area and volume of soil double that of Midden 303 (114 subsquares, 20.3 cubic meters versus 55 subsquares, 10.3 cubic meters), yet the two middens produced nearly identical quantities of fundamental artifact and refuse categories such as rim sherds and fire-cracked rock, and similar quantities of other categories such as faunal material and body sherds. The evidently richer nature of Midden 303 thus mitigates against the smaller extent of the excavations, and results in a roughly comparable sample size. It follows that any observed differences between the two middens should be real.

The results of comparisons between middens 301 and 303 demonstrate considerable intra-site variability within the Late Woodland component. Although both samples are dominated by vessels of the Pound Necked type, the two middens only share five of the total of ten Late Woodland pottery types present: Ontario Horizontal and Glen Meyer Necked are only represented in Midden 301, while Black Necked, Niagara Collared and Parker Fes-tooned are confined to Midden 303. The attribute analysis of the ceramics underscores some of the differences implicit in these distributions and highlights others. Collarless vessels are somewhat more common in Midden 301, obtuse-angled lips are 14% more common, interior decoration and secondary neck decoration are twice as common, and Midden 301 features five of the six vessels with secondary collar decoration. In Midden 301 plain vessels are absent, and Opposed:Blank collar motifs are three times as common, while in Midden 303 Op-posed:Filled Collar motifs are three times as common. The linear stamped technique is twice as common on Midden 301 vessels. The smoothed-over ribbed paddle body treatment, a minority technique in both middens, is also twice as common in the Midden 301 sample. Lastly, comparisons indicate that the Midden 301 vessels display a greater range of size and are on average larger. The ceramic pipe sample is too small to permit meaningful comparisons although it may be noted that pipe types are largely mutually exclusive and that pipe fragments are twice as common in Midden 301. The same is true of lumps of clay. Non-ceramic differences are also evident between the middens. For example, Kettle Point chert is twice as common in Midden 303, and this midden produced the only cores and points of that material. Midden 303 evidently also has more fire-cracked rock, given that it produced a similar weight from an excavation half the size. Finally, cup-and-pin game deer phalanges are almost exclusively confined to Midden 303: it produced 28 of the 30 specimens recovered.

In the absence of settlement data and total site excavation, the observed intra-site variation at Pond Mills is much less susceptible to interpretation than at Willcock where a single Iroquoian population and broad contemporaneity were demonstrable. For example, temporal changes in the local ceramic sequence discussed in the upcoming C.O.E.D. summary section suggest that Midden 301 seriates earlier than Midden 303, but this cannot be viewed as proof of substantial non-contemporaneity for the two middens, as Willcock shows. Nor can the total lack of vessel matches between the two middens be taken as proof of non-contemporaneity. The two are approximately 35 meters apart at the closest point, an interval that nearly exceeds the maximum distance between physical rim matches of about 36 meters at Nodwell (J.V Wright 1974: Figure 21). Willcock features several more remote physical matches (37, 38, 38, 39, 42 and 43 meters), but these may be expected when the same population is discarding refuse out of opposite ends of a single longhouse. The absence of inter-midden matches at Pond Mills, therefore, may mean no more than that Middens 301 and 303 did not serve the same (intervening) house(s). The observed intra-site ceramic variation may thus be short-term temporal in origin (as at Willcock), may reflect contemporary conservative versus progressive households (as at Nodwell), or may derive from possible differences in lineage (as with the Lawson hamlets).

More strictly functional variation may also be present at Pond Mills, reflecting either different seasonal occupations and activities or different activity areas within a single occupation: this may explain the differential distributions of fire-cracked rock and lumps of clay. Other observed variations may reflect a differential access to re-

sources, as in the concentration of Kettle Point chert in Midden 303.

The variation in pot size may further reflect different social practices between the peoples using the two middens. As Warwick (1984:113-114) notes, smaller pots with an orifice diameter of less than 22 cm (one to six litres) were probably used by individuals, nuclear families and menstruating women, while larger pots were more likely reserved for guests and household feasts. By these criteria, the population represented by Midden 301 would appear to have been more gregarious.

The distribution of cup-and-pin game phalange presents an even more marked difference between the middens. Ethnographic comparisons (McCullough 1978:86-91) show that such artifacts were used across much of North America in the game of the same name, although it has been suggested that they pertained to a "love" or "matrimonial" rather than strictly recreational game among some tribes. At the Draper site, the heterogeneity and dispersed distribution of these artifacts caused McCullough (Ibid:91) to question their supposed function as cup-and-pin game units. Sources reviewed by McCullough indicate that four or more phalange may have been strung together in each unit of the game, and the concentration of these artifacts in Midden 303 may suggest that this was indeed their function at Pond Mills.

None of the above interpretations of intra-site variability at Pond Mills are offered with any degree of confidence: the excavations to date are far too limited to weigh the significance of much of the observed variation or to permit detailed speculation on the underlying causes, let alone to posit a chert merchant or a recreation centre or a honeymoon suite for Midden 303. Nevertheless, the information reviewed is sufficient to emphasize two important facts: that intra-site variation is present at the Pond Mills site; and the potential explanations for that variation are most probably multiple and by no means mutually exclusive.

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Upcoming Events at the Museum of Ontario Archaeology



Each Monday between February 22 – March 29, & on Mon. April 26th “Archaeology in Ontario: Our Secret Past” Community Outreach Speaker Series at downtown London Central Library, Wolfe Performance Hall, 7 pm.

Speakers include Dr. Robert Pearce, Dr. Michael Spence, Dr. Chris Ellis, Dr. Neal Ferris, Dana Poulton & Christine Dodd, Dr. Holly Martelle, and Rudy Fecteau

Sat. & Sun. March 6 & 7: Snowsnake Tournament & Winter Festival

Experience this traditional, Woodland, Native winter sport as competitors throw their specially made “snowsnake” down the track. Enjoy outdoor activities such as snowshoeing and dog sled demonstrations.

Saturday, April 10: 8th Annual Underwater Heritage Event
“Sir John Franklin – Quest for the Northwest Passage” Keynote
 Speaker: David Woodman, Mariner, Author, Explorer
 Morning and afternoon seminars, evening wine & cheese presentation.

Visit the Museum’s Event Page at its website at
www.uwo.ca/museum for more details.